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Roads General Authority

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ISWIM

VanJee WIM(Weigh-In-Motion) Direct Enforcement System for Saudi Arabia

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1 - WIM Status in the Kingdom

Since 2010, there is an existing network of 31 high speed WiM pre-selection systems distributed throughout KSA. These sites are partnered with fixed weighing stations that utilise low speed weigh in motion systems and basic IT technology.

2 - Target of Tahakom: WIM Direct Enforcement

Tahakom is Saudi Technology and Security Comprehensive Control Co. Ltd. They represent MOT and MOI to implement WIM direct enforcement in KSA.

As part of the weight and dimension programme (WDP), Tahakom is looking to implement a direct enforcement pilot. The overall objective of the direct enforcement approach is to significantly reduce the number of offending vehicles, ultimately reducing road maintenance costs and traffic accidents. The purpose of the pilot is to evaluate the effectiveness of equipment,performance of the supplier, and suitability of direct enforcement in Saudi Arabia, with a view to roll-out systems across the entire road network in the Kingdom.

3 - VanJee WIM Direct Enforcement Introduction

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Shibh Al Jazira Technology

- The direct enforcement system is divided into a front-end detection system and an integration software.
- The front-end detection system includes WIM sensors, LiDAR sensors, cameras, they are used to acquisite vehicle weight, vehicle dimension, vehicle pictures and license plate information.
- The integration software is used to gather data and assemble evidence from all front-end detection devices, store vehicle data and issue violation tickets for overlimit vehicles.

4 - VanJee WIM Direct Enforcement Implementation

- In general, the system includes WIM subsystem, ANPR subsystem, LiDAR dimension detection subsystem, video monitoring subsystem, data processing subsystem, and violation package issuing subsystem.

5 - VanJee Weigh-In-Motion Subsystem

- In this project, 36 WIM sensors are used on three lanes, 12 sensors per lane.
- The weighing accuracy required to be at least 95% (gross weight) as per COST 323 international standard. Tahakom admitted that VanJee system meet the requirement of weight accuracy, that is first verification ±2.5%, on-use ±5%.

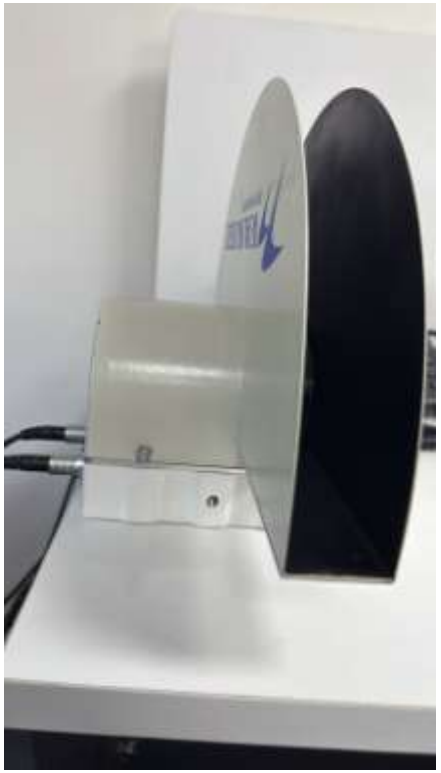
6 - License Plate Recognization Subsystem(ANPR)

- Three license cameras are used to cover three lanes to capture plate image (plate number) and vehicle front image, two dome cameras are used to capture vehicle side image.
- The license recognition rate is required to be 90% accuracy or higher during day or night, after changing to use HIKVISION, the accuracy is achieved.

7 - Video Monitoring Subsystem

- Two dome cameras are installed take video while vehicle passing and capture vehicle side images to show the axle number of each vehicle, as a complete evidence chain.

8 - VanJee LiDAR:Vehicle Dimension Measurement Subsystem



- VanJee LiDAR measure vehicles on all lanes and the error is less than 5% in vehicle length, width, and height.

9 - Data Processing Subsystem

- VanJee Highspeed integration software gather and match all data of each vehicle, assemble evidence of a violation from all the equipment (WIM, Dimensions Measuring Scanner and ANPR) into a data package.
- The Highspeed software is a User Interface for demostration, database query, generating vehicle report and creating violation tickets.

10 - Violation Package Issuing

- VanJee integration software creates Violation Ticket for each vehicle.
- VanJee integration software provides the following violation package outputs.

vi. Violation package Outputs

The Trucks Violation Package includes violation details, fines, and vehicle information, along with measurement data shown in table 5 and figures (1,2) below:

Violation Package components:	
Gross vehicle weight	Group of axles load
Vehicle axle spacing	Wheel load (axle side)
Vehicle classification	Wheelbase and length
Vehicle speed	Vehicle height
Axle of group load	Vehicle width
Single axle load and limits	Vehicle length
Date and time of event	Number plate reading
Axle number	License type
License plate image	Truck full image showing all axles clearly
Site Coordination	Scale Code
Load type	Serial number
Printing time	Origin Place
Destination Place	Start trip
End trip	Total violation amount
The dimensions exceeding the limit.	Detailed violation amount -dimension
Total excess gross weight	Detailed violation amount - gross
Actual weight of the axles	
The axles exceeding the allowed load.	Detailed violation amount - axles

11 - VanJee and Traffic Tech's Partnership

- Traffic Tech is an award-winning, ISO-certified total solutions provider specializing in traffic management, intelligent transportation systems (ITS), parking management, security, communications, and truck weigh stations.
- Founded in 2000, TTG has grown into one of the leading ITS companies in the region, operating with 1,400+ employees, 250+ vehicles, 3,500 m² of offices, and a 7,000 m² warehouse facility.
- Traffic Tech is proud to serve as VanJee's first strategic partner in the Middle East for advanced 3D LiDAR solutions. This partnership positions Traffic Tech at the forefront of next-generation sensing technologies in the region, enabling the deployment of high-precision traffic data collection, WIM integration, and smart-mobility applications - including self-driving, autonomous-vehicle support, and V2X communication systems - powered by VanJee's state-of-the-art 3D LiDAR technologies.

12 - Conclusion

- VanJee's mission is to protect road, ensure road safety and improve traffic efficiency of the Kingdom. VanJee has significant regulation experience against overload trucks. VanJee is dedicated to provide WIM and LiDAR solution to protect KSA's road and bridge. VanJee would always solve clients's major problems by relying on our expertise and dedication.

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Thank You for attending this presentation

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